LISTING OF THE CLAIMS

The claims are listed purely for the convenience of the Examiner. No claims have been added, canceled, or amended:

1. (Previously presented) An image conversion method in which image data represented by a required number of pixels is obtained from original image data represented by a predetermined number of pixels, comprising the steps of:

carrying out a first, initial image conversion, without previously enlarging which controls said original image data to said predetermined number of pixels, by obtaining, by a first interpolation calculation, image data represented by a number of pixels which is one-half of the predetermined number of pixels, from the original image data represented by the predetermined number of pixels;

preparing an intermediate image by repeatedly carrying out the first, initial image conversion at a rate of one-half of the number of pixels, until a number of pixels close to the required number is reached; and

carrying out a second image conversion by obtaining, from the intermediate image, image data represented by the required number of pixels.

2. (Previously presented) An image conversion method in which image

data represented by a required number of pixels is obtained from original

image data represented by a predetermined number of pixels, comprising

the steps of:

carrying out a first image conversion by obtaining, by a first

interpolation calculation, image data represented by a number of pixels

which is one-half of the predetermined number of pixels, from the original

image data represented by the predetermined number of pixels;

preparing an intermediate image by repeatedly carrying out the first

image conversion at a rate of one-half of the number of pixels, until a

number of pixels close to the required number is reached; and

carrying out a second image conversion by obtaining, from the

intermediate image, image data represented by the required number of

pixels;

wherein the first interpolation calculation, which is carried out when

the first image conversion for preparing the intermediate image is effected,

is different from a second interpolation calculation, which is carried out

when the image conversion for obtaining the image data represented by

the required number of pixels from the intermediate image is effected.

Docket No. 1982-0136P

Page 4 of 18

3. (Original) An image conversion method according to claim 1,

wherein the intermediate image has a number of pixels which is greater

than and closest to the required number of pixels.

4. (Previously presented) An image conversion method in which image

data represented by a required number of pixels is obtained from original

image data represented by a predetermined number of pixels, comprising

the steps of:

carrying out a first image conversion by obtaining, by a first

interpolation calculation, image data represented by a number of pixels

which is one-half of the predetermined number of pixels, from the original

image data represented by the predetermined number of pixels;

preparing an intermediate image by repeatedly carrying out the first

image conversion at a rate of one-half of the number of pixels, until a

number of pixels close to the required number is reached; and

carrying out a second image conversion by obtaining, from the

intermediate image, image data represented by the required number of

pixels;

wherein the intermediate image is prepared by dividing the original

image data into partial images and repeatedly carrying out the first image

conversion to one-half of the number of pixels for each of the partial

images.

5. (Previously presented) An image conversion method in which image

data represented by a required number of pixels is obtained from original

image data represented by a predetermined number of pixels, comprising

the steps of:

carrying out a first image conversion by obtaining, by a first

interpolation calculation, image data represented by a number of pixels

which is one-half of the predetermined number of pixels, from the original

image data represented by the predetermined number of pixels;

preparing an intermediate image by repeatedly carrying out the first

image conversion at a rate of one-half of the number of pixels, until a

number of pixels close to the required number is reached; and

carrying out a second image conversion by obtaining, from the

intermediate image, image data represented by the required number of

pixels;

wherein the first and second interpolation calculations are carried

out by using at least two types of interpolation calculation methods.

6. (Previously presented) An image conversion method in which

image data represented by a required number of pixels is obtained from

original image data represented by a predetermined number of pixels by

repeatedly carrying out a first interpolation calculation at a rate of one-half

of the number of pixels,

wherein image data represented by the required number of pixels is

obtained by carrying out a second interpolation calculation at a rate of x

(wherein 1>x>1/2) of a number of pixels at one of a beginning step, an

intermediate step, and a final step of image conversion.

7. (Previously presented) An image conversion method in which

image data represented by a required number of pixels is obtained from

original image data represented by a predetermined number of pixels,

comprising the steps of:

obtaining by interpolation calculation, from the original image data

represented by the predetermined number of pixels, image data represented

by a number of pixels of 1 / N (wherein N is an integer of 2 or more) or

greater, by using an N-size filter used to obtain an interpolated point

from N pixels, thereby allowing image conversion; and

obtaining image data represented by the required number of pixels by

carrying out the interpolation calculation in plural stages.

Docket No. 1982-0136P

Page 7 of 18

8. (Original) An image conversion method according to claim 7,

wherein the required number of pixels is 1 / N (wherein N is an integer of 2

or more) or less.

9. (Previously presented) An image conversion method according to

claim 7, wherein the interpolation calculations carried out in plural stages

are effected in order from that of the lowest conversion rate.

10. (Original) An image conversion method according to claim 7,

wherein the interpolation calculation is carried out by using at least two

types of interpolation calculation methods.

11. (Previously presented) An image conversion apparatus

comprising:

setting means for setting a number of pixels after a first and a second

image conversion of original image data represented by a predetermined

number of pixels;

interpolation calculation means which effects the second image

conversion by obtaining, by interpolation calculation, image data represented

by pixels of the number set by said setting means; and

control means which controls said interpolation calculation means

such that said interpolation calculation means converts the original image

data into an intermediate image having a number of pixels close to the

number of pixels set by said setting means by repeatedly effecting the first

image conversion to one-half and such that said interpolation calculation

means carries out the second image conversion to further make the

intermediate image into the set number of pixels.

12. (Previously presented) An image conversion apparatus

comprising:

setting means for setting a number of pixels after a first and a

second image conversion of original image data represented by a

predetermined number of pixels;

first interpolation calculation means which effects image conversion

by obtaining, by interpolation calculation a first and from the original

image data represented by the predetermined number of pixels, image data

represented by pixels of a number which is one-half of the predetermined

number of pixels, and prepares an intermediate image by repeatedly

effecting the first image conversion at a rate of one-half until a number of

pixels close to the required number of pixels is reached; and

second interpolation calculation means which effects a second interpolation calculation such that the intermediate image is further made into image data represented by pixels of the number set by said

13. (Previously presented) An image conversion apparatus comprising:

setting means for setting a number of pixels after image conversion of original image data represented by a predetermined number of pixels;

interpolation calculation means which effects

setting means.

interpolation calculation at a rate of 1/N (wherein N is an integer of 2 or more) or greater by using an N-size filter used for obtaining an interpolated point from N pixels; and

control means which controls said interpolation calculation means so that image data represented by pixels of the number set by said setting means is obtained by effecting the interpolation calculation in plural stages.

14. (Previously presented) An image conversion processing program which allows image conversion processing, for converting original image data represented by a predetermined number of pixels to image data

Docket No. 1982-0136P

Page 10 of 18

representing an image by a set number of pixels, to be executed by a

computer, comprising:

a first step in which a first, initial image conversion, without

previously enlarging which controls said original image data to said

predetermined number of pixels, is effected by obtaining, by interpolation

calculation, image data represented by pixels of a number which is one-

half of the predetermined number of pixels from the original image data

represented by the predetermined number of pixels, and an intermediate

image is prepared by repeatedly effecting the first, initial image conversion

to one-half until a number of pixels close to a required number of pixels is

reached; and

a second step in which a second image conversion is effected by

obtaining image data represented by a required number of pixels from the

intermediate image prepared in said first, initial step.

15. (Previously presented) An image conversion processing program

which allows image conversion processing, for converting original image

data represented by a predetermined number of pixels to image data

representing an image by a set number of pixels, to be executed by a

computer, comprising:

a first step in which image data, which is represented by a number

of pixels which is reduced to

1/N (wherein N is an integer of 2 or more) of the predetermined

number of pixels, is obtained by interpolation calculation from original

image data represented by the predetermined number of pixels, by using

an N-size filter used for obtaining an interpolated point from N pixels; and

a second step in which image data represented by a required number

of pixels is obtained by carrying out said first step in plural stages.

16. (Original) A recording medium on which the image conversion

processing program according to claim 14 is recorded.

17. (Original) A recording medium on which the image conversion

processing program according to claim 15 is recorded.

18. (Previously presented) An image conversion method in which

image data represented by a required number of pixels is obtained from

original image data represented by a predetermined number of pixels,

comprising the steps of:

repeatedly carrying out a first, initial image conversion, without

previously enlarging which controls said original image data to said

Docket No. 1982-0136P

Page 12 of 18

predetermined number of pixels, which obtains, by interpolation

calculation and from initial image data, subsequent image data

represented by a number of pixels which is one-half of the number of

pixels of the initial image data, said first, initial image conversion being

repeatedly carried out from the original image data until the number of

pixels of image data obtained by the first, initial image conversion is near

the required number of pixels; and

obtaining, from image data of the number of pixels near the required

number of pixels, image data represented by the required number of

pixels.

19. (Previously presented) An image conversion method in which image

data represented by a required number of pixels is obtained from original

image data represented by a predetermined number of pixels, comprising

the steps of:

carrying out a first image conversion by obtaining, by a first

interpolation calculation, image data represented by a number of pixels

which is one-half of the predetermined number of pixels, from the original

image data represented by the predetermined number of pixels;

Docket No. 1982-0136P

Page 13 of 18

preparing an intermediate image by repeatedly carrying out the first

image conversion at a rate of one-half of the number of pixels, until a

number of pixels close to the required number is reached; and

carrying out a second image conversion by obtaining, from the

intermediate image, image data represented by the required_number of

pixels;

wherein said step of carrying out conversion by obtaining, from the

intermediate image, image data represented by the required number of pixels

performs conversion at a rate of x (wherein $1>x>\frac{1}{2}$).

20. (Previously presented) The image conversion apparatus according

to claim 11, wherein said second image conversion to further make the

intermediate image into the set number of pixels performs conversion at a rate

of x (wherein $1>x>\frac{1}{2}$).

21. (Previously presented) An image conversion method in which image

data represented by a required number of pixels is obtained from original

image data represented by a predetermined number of pixels, comprising

the steps of:

carrying out a first image conversion by obtaining, by a first

interpolation calculation, image data represented by a number of pixels

U.S. Application No. 09/397,920 Docket No. 1982-0136P

0. 1962-0136P

Page 14 of 18

which is one-half of the predetermined number of pixels, from the original

image data represented by the predetermined number of pixels;

preparing an intermediate image by repeatedly carrying out the first

image conversion at a rate of one-half of the number of pixels, until a

number of pixels close to the required number is reached; and

carrying out a second image conversion by obtaining, from the

intermediate image, image data represented by the required number of

pixels;

wherein the first and second interpolation calculations are carried

out by using at least two types of interpolation calculation methods;

wherein the first interpolation calculation performs high-speed

conversion and a the second interpolation calculation, which is performed

subsequent to said first interpolation calculation, is for preserving image

quality.

22. (Previously presented) The image conversion method according to

claim 10, wherein a first type of interpolation performs high-speed conversion

and a second type of interpolation, which is performed subsequent to said first

type, is for preserving image quality.